



SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1969

A NON-PROFIT AMATEUR TECHNICAL ORGANIZATION DEDICATED
TO THE ADVANCEMENT OF COMMUNICATIONS ABOVE 1000 MC.

W6IFE Newsletter

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The **2 December** 1999 meeting of the SBMS will have Dave, WA6CGR talk about the construction of a solid state 100w 1296 MHz amplifier. The SBMS meets at the American Legion Hall 1024 Main Street (south of the 91 freeway in Corona, CA at 1900 hours local time on the first Thursday of each month.. Check out the SBMS web site at <http://www.ham-radio.com/sbms/>. Thanks to the webmaster Chip, N6CA, there are lots of member pictures and items to read.

Last meeting - Dave, WA6CGR and Doug, K6JEY both brought in their frequency counters to measure members oscillators and sources. They even checked their rubidium references against one another (within 1 Hz). If you get a chance, pick up one of the Proceedings of the 1999 Microwave Update, 600+ pages with lots of good articles from the tech talks. Doug, K6JEY reported some web site for good data and good deals on parts-- <http://www.semiconduct.agilent.com/news/pr/22feb99a.html> for phemts and designer kits at www.em.avnet.com/RFM/marketing/HP-19990607RFMW.html. Bill, WA6QYR passed out some 30 MHz oscillator ICs from Chuck, WA6IGP from last months notice in the newsletter. Ed, W6OYJ indicated that WA6IGP has a number of ERA-3 MMICs available. 15 people present.

Scheduling-

6 Jan 2000 Ed W6OYJ will talk about the Qualcomm synthesizer

3 Feb. TBD

2 Mar. TBD

Wants and Gots for Sale

Want 24 GHz gunnplexer and dish, Alicia KF6WMX 909-384-0034

Want WR-42 90 degree twist and waveguide switch Dave WA6CGR 909-612-5888.

Want 2 GHz mixer John Oppen 714-761-0242

Activity reported at the November SBMS meeting- Chuck, WA6EXV finished up refurbishment of his VHF and UHF antennas and went on the DX pedition reported in last months newsletter; Bill, WA6QYR worked on his GPS based frequency reference and went on the 24 GHz DXpedition; Ed, W6OYJ went to Microwave Update 99 along with Chuck, WB6IGP, Kerry N6IZW and built a 24 GHz marker using a mixer from a Qualcomm board and his 440 MHz HT., Mel, WA6JBD went on the DXpedition; Doug, K6JEY has an article coming up in Jan QST, worked K1FO on 432 MHz EME, and is building a 24 GHz SSB rig; John, KJ6HZ is collecting parts for rigs; Gary, KE6JUV worked on 2.4 GHz ATV and is building a SSB 10 GHz rig; Dave, WA6CGR has many communications projects, is building a 5.6 GHz rig and had a 24 GHz contact with K6MEM; Jim, K6ML is recovering from his move and found his new QTH can received ATV from Mt. Santiago; Larry, K6HLH is still out of his house now 9 months for repairs; Ken, WB6DTA had some 2 mtr work Bob, W6SYA had 2 mtr work; Dick, WB6DNX returned from Europe.

In the Nov./ Dec. 1999 issue of QEX, John Stephensen, KD6OZH has a great 7 page article on "A Stable, Low-Noise Crystal Oscillator for Microwave and Millimeter-Wave Transverters.

Another outing on 24 GHz-- On 11 November Chuck, WA6EXV; Mel, WA6JBD and Bill, WA6QYR went out to some of the sites in the desert to check if one could use them for 24 GHz as well as 10 GHz from the previous 10 GHz gunnplexer days of the 10 GHz contest. These sites were picked to make the shorter distances the 5 mw gunn would reach and make as many contacts with 6000 ft Heaps Pk DM14kf in the San Bernardino Mountains while roving the desert side of the mountains. Mel went to a spot just out side the Heaps Pk compound and set up. Chuck went to the Kramer Hills site DM14fv (now a cell phone site) just south of the highway 395 and 58 intersection. The first site Bill went to was on the curve of highway 14 just north of the Mojave Airport , DM05wc. A few hundred feet east of the current road off to the south for Kemiron chemical company plant the GPS indicated 35 deg 05.58N by 118 deg 08.90 W 2696 ft. Contact was made with Mel at 1:45 p.m. on DM14kf with at noise level signals even though one could see Heaps Pk. Contact with Chuck at Kramer Hills, DM14fv had full S meter signals at 1:57 p.m. Chuck worked Mel with very weak signals from Heaps Pk. Bill moved to Phone repeater ATT site (previously called DM15aa) off Highway 58 at the 3rd cable pole sign to the east on dirt road on top of small knoll. GPS indicated 35 deg 01.28 N by 118 deg 00.89w at 2565 ft DM05xa. Chuck was behind a ridge of the rocket site on Edward's AFB and no contact was made. Bill could hear Mel at the noise level where it just wiggled S meter but no audio even though Heaps could be seen through the haze. Mel had another commitment so the event ended. Chuck and Bill had their surplus Trimble mushroom GPS units tied into older portable computers which had Chuck's program. Chuck had written a program to take the GPS data and compute local location in a 6 digit grid square. One could then enter the name of another location which had been stored with lat./ long data, and compute the pointing and distance data required for contacts. This was the first field attempt with the program and it worked great. Bill WA6QYR

KF6KVG has placed two new beacons in operation on 10 and 24 GHz in Northern California. Both are low power, continuous carrier with FM voice ID at 1 minute intervals. Location: Mt. Umuhnum, CM97AE, 3400 Ft ASL Frequency: 10367.990 MHz and 24191.977 MHz The 10 GHz beacon has been heard at S9 in CM88SI using an 18 inch offset feed dish. Send reception reports via snail mail to Bob Johnson, KF6KVG Other Northern California beacons are: Mt. VACA on 10368.325 Mt. St. Helena on 10368.01873, Steve Todd ,K2IYQ

Newington CT November 19, 1999 To all radio amateurs ARLB089 ARRL Board of Directors Election Results In the Pacific Division race for Vice Director, Robert Vallio, W6RGG, won a three-way race over Jettie Hill, W6RFF, and John Ronan, III, K3ZJJ. Vallio polled 1278 votes to 1186 for Hill and 1155 for Ronan. An ARRL Life Member, Vallio--who's currently East Bay Section Manager--will serve a two-year term. Incumbent Directors Tod Olson, K0TO (Dakota) and Brad Wyatt, K6WR (Pacific), also decided not to seek re-election. Incumbent Vice Directors Jay Bellows, K0QB (Dakota), and James Maxwell, W6CF(Pacific), will move up to Director in their respective divisions. Newcomer Twila Greenheck, N0JPH, was unopposed to become the Dakota Division's new Vice Director. Terms of office for all successful candidates begin at noon January 1, 2000.

Enclosed in this newsletter is some material from John Gehman, WB6BKR of the San Diego Microwave Group. John has built a boomerang for 24 GHz. The purpose of the device is to allow one to check the operation of his polarplexer/ gunnplexer full duplex rig. The Boomerang dates back to early SBMS days. It is nothing more than a diode in a waveguide driven by a 30 MHz (IF frequency of the duplex system) oscillator. The transmit RF from the station is received via a horn antenna into the waveguide and mixes with the 30 MHz in the diode and is reradiated back toward the station. The received signal is an indication of both station ERP and sensitivity. It is a useful tool to tweak antennas, transmitters and receivers. John added one helpful feature of a modulation to help in hearing the signal return on an FM system.

I had some questions about John's data and John's answers are the following:

1) I assume the diode holding tubes are positioned 3/16 inch from the back of the 13/32 waveguide tube? John- The diode is 3/16 to the end of the 13/32 wave guide tube.(yes) 2) On the "end cap", there is a flat plate across the guide? What is the depth of the slots in the end cap that let it slide over the diode holding tubes?-- deep enough to allow the flat plate of the end cap to come against the rear of the diode holding guide or to hold the flat plate some guide wavelength away from the diode? John- The end cap is a waveguide short with an end plate over the 7/16 tube.(yes) The slots permit adjustment of the waveguide short . approx. 3/8 in+ enough to be about 3/4 wavelength. The boomerang can be operated without an end cap . 3) What kind of diode is used? A surface mount device? I assume the toothpick is glued to the diode is just to allow the assembler to hold it in place while soldering the diode to the wires? then the toothpick just stays there?? John- I used a diode from one of the Qualcomm rigs supplied by N6IZW and WB6IGP; it is a tiny 1/32 pill with two small leads.(surface mount). The toothpick and super glue (cyanoacrylate) is about the only thing that can hold the diode without slipping and losing it forever. Caution: do not allow the glue to touch any solderable parts; it will not solder afterward. Use super glue remover to detach the toothpick ; not brute force. Looking from the end it is recommended that the diode is soldered either to right or left side of the coax terminals lugs to allow the soldering iron to get behind the diode without directly touching it (and the glue).

More notes from John-on the schematic for the modulator. I use one a 30 MHz chip and a 4011. The 4011 modulates the 30 MHz at 1 KHz at a 1 sec beep rate. It helps to identify it with a beeping tone rather than just a noise quieting indication, I have a data sheet of its layout; it uses 4 "N" cells to power it and the diode. On my unit I provided a switch to operate in the CW and the pulsed tone mode. 73' John B. Gehman WB6BKRe-mail gehmansr1@juno.com

The data on the 30 MHz oscillator IC provided via Chuck, WB6IGP

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